



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,039	01/22/2004	Temple Smith	2003320-0036 (Alien Seque	6987
24280 7590 04/26/2007 CHOATE, HALL & STEWART LLP TWO INTERNATIONAL PLACE BOSTON, MA 02110			EXAMINER GOLDBERG, JEANINE ANNE	
			ART UNIT	PAPER NUMBER
			1634	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/26/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/763,039

Applicant(s)

SMITH ET AL.

Examiner

Jeanine A. Goldberg

Art Unit

1634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12/7/06; 2/12/07.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3,4 and 14-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3,4 and 14-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/07; 4/07</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This action is in response to the papers filed December 11, 2007 and February 12, 2007. Currently, claims 1-3, 14-18 are pending.
2. All arguments have been thoroughly reviewed but are deemed non-persuasive for the reasons which follow. This action is made FINAL.
3. Any objections and rejections not reiterated below are hereby withdrawn.
  - a. Newly Amended claim 1 requires that the "alien sequence does not occur naturally in ANY organism". The rejection of Schena has been withdrawn because Schena teaches using Arabidopsis nucleic acids. Bao has been withdrawn because Bao uses lambda phage DNA. Moreover Shah teaches using nucleic acid from a foreign genome. Although the passage requiring that the nucleic acid does not naturally occur in ANY organism is new matter, the instant rejections have been withdrawn because they teach using nucleic acid from known organisms.

### ***Maintained Rejections***

### ***Election/Restrictions***

4. Applicant's election without traverse of Group I, Claims 1-3 in the paper filed May 9, 2006 is acknowledged.

The requirement is still deemed proper and is therefore made FINAL.

***Priority***

5. This application claims priority to provisional application 60/441,832, filed January 22, 2003.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-3, and newly added Claims 14-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Kincaid (2003/0186310, October 2003).

Kincaid teaches an apparatus of detecting features on a microarray. The apparatus comprises a control probe at each feature location on the microarray (abstract). The test probe is attached to each feature of the microarray such that each feature comprises a control probe and a test probe (abstract). As seen in the flow diagram of Figure 1, the control probe and test probe are attached to the support. The added labeled control probe and the test target are hybridized and the microarray is scanned. Control probes (i.e. alien sequences) are a specific, known sequence of nucleic acids in known quantity that do not interfere with a hybridization assay of a target sample under test (para 16). Moreover the control sequences are statistically

known not to hybridize or otherwise interfere with an oligomer test probe or target sample under test (para 55). The control probe does not function as an oligomer test probe and does not hybridize with a test target sample and does not interfere with hybridization (para 55). Kincaid teaches the control probes do not take up "valuable real estate" or dedicated features on the microarray but instead the control probe is populated on each feature of the microarray along with a respective oligomer test probe (para 16). The control probe also allows detection of all feature locations regardless of the quality of the signal from hybridized test probes, regardless of the quality of the placement of the oligomer test probes and regardless of the shape of the feature (para 22).

With respect to the newly added Claims 14-16, the claims recite limitations for the process and not the products claimed. Thus, the algorithm, if the same products are generated are not affected. Therefore, Kincaid anticipates the claimed invention because Kincaid teaches every limitation of the instant claims.

#### **Response to Arguments**

The response traverses the rejection. The response asserts the claims have been amended to recite that the alien probe is generated by a modified Hidden Markov algorithm in which a sequence statistic of the one or more naturally-occurring sequences of interest is switched at an adjustable frequency to a sequence statistic that is inversely proportional to the natural sequence statistic. This argument has been considered but is not convincing. As provided by MPEP 2113, "[E]ven though product-by-process claims are limited by and defined by the process, determination of

patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).” Here while the claims provide the process, namely the Hidden Markov Model algorithm, by which the product was made, the product produced appears to be anticipated. Kincaid teaches that the control sequences are statistically known not to hybridize or otherwise interfere with an oligomer test probe or target sample under test (para 55). The Hidden Markov Model algorithm is also a statistical method to produce probes which are not known to exist in the test organism. Thus, the methods would appear to both produce the same products which do not appear to interfere with the genome of the test organism.

Moreover, the MPEP further states that “Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983)”.

Thus for the reasons above and those already of record, the rejection is maintained.

**New Grounds of Rejection Necessitated by Amendment**

***New Matter***

7. Claims 1-3, 13-18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In the amended claims, reference to "the alien sequences does not occur naturally in any organism" is included. The amendment proposes that the new claim language clarifies the issue. However, the specification does not describe or discuss "the alien sequences does not occur naturally in any organism". Instead the specification at para 123 of the Publication describes "such a sequence should be different from any cDNA occurring in the genome. The degree of "alien"ness of the sequence can be verified by comparing the generated sequences to the organism's genome (if available) or cDNA by using BLAST or another sequence comparison program. Oligos are then generated from the sequences by using another software program which checks for T<sub>m</sub> and % GC content. The generated oligos are also compared to the organism genome or cDNA to verify that they do not hybridize to any part of the genome. This description does not support the alien sequences does not occur naturally in any organism. The description supports that the sequences of the alien probes are alien to the genome of interest. Figure 3 specifically illustrates human and mouse positive controls. Example 1 illustrates that the computer program identifies nucleic acids which are alien to mouse cDNA. The concept of "the alien sequences

Art Unit: 1634

does not occur naturally in any organism" does not appear to be part of the originally filed invention. Therefore, "the alien sequences does not occur naturally in any organism" constitutes new matter. Applicant is required to cancel the new matter in the reply to this Office Action.

***Claim Rejections - 35 USC § 112-Description***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 1-3, 14-18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are drawn to alien sequences does not occur naturally in any organism. The claims specifically recite 100 particular probes in Claims 17-18.

*Vas-Cath Inc. V. Mahurkar*, 19 USPQ2b 1111, clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, whatever is now claimed". Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 USC 112 is severable from its enablement provision. In *The Regents of the University of California v. Eli Lilly* (43 USPQ2b 1398-1412), the court held that a generic statement which defines a genus of



nucleic acids by only their functional activity does not provide an adequate written description of the genus. The court indicated that while Applicants are not required to disclose every species encompassed by a genus, the description of a genus is achieved by the recitation of a representative number of DNA molecules, usually defined by a nucleotide sequence, falling within the scope of the claimed genus. At section B(1), the court states that "An adequate written description of a DNA...' required a precise definition, such as by structure, formula, chemical name, or physical properties', not a mere wish or plan for obtaining the claimed chemical invention".

In analyzing whether the written description requirement is met for a genus claim, it is first determined whether a representative number of species have been described by their complete structure. Here, the claims require the alien sequences does not occur naturally in any organism. Any organism would encompass not only human and mice but also kangaroo, chimpanzee, worm, dog, cat, for example. The specification provides no guidance to the skilled artisan how to determine whether a particular sequence is not found in ANY organism. While SEQ ID NO: 1-50 and SEQ ID NO: 101-150 may not be found in mouse or human. The genomes of all organisms, for which one would have to compare these sequences to, has not been described. With out the description of all genomes of all organisms, one can not describe which sequences are NOT present in these genomes, as required by the instant claims. There is substantial variability among the species of DNAs encompassed within the scope of the claims. In view of the level of knowledge and skill in the art, one skilled in the art would not recognize from the disclosure that the applicant was in possession of the genus of the

Art Unit: 1634

alien sequences does not occur naturally in any organism. Accordingly, Applicants have not adequately disclosed the relevant identifying characteristics of a representative number of species within the claimed genus. Accordingly, Applicants have not adequately disclosed the relevant identifying characteristics of a representative number of species within the claimed genus.

### ***Conclusion***

**9. No claims allowable over the art.**

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

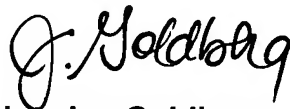
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Jeanine Goldberg whose telephone number is (571) 272-0743. The examiner can normally be reached Monday-Friday from 7:00 a.m. to 4:00 p.m.

Art Unit: 1634

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla, can be reached on (571) 272-0735.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

The Central Fax Number for official correspondence is (571) 273-8300.



**Jeanine Goldberg**

**Primary Examiner**

April 23, 2007